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SULTAN IDRIS EDUCATION UNIVERSITY

MYOSMAS: THE DEVELOPMENT OF ONTOLOGY-BASED SMART STUDENT ADVISING SYSTEM

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FAKULTI SENI, KOMPUTERAN & INDUSTRI KREATIF

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MYOSMAS   : THE DEVELOPMENT OF ONTOLOGY-BASED SMART STUDENT ADVISING SYSTEM

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MYOSMAS: THE DEVELOPMENT OF ONTOLOGY-BASED SMART STUDENT ADVISING SYSTEM

ABSTRACT

The development of a web-based academic advising system called MyOsmas that aims to help advisors and students monitor student learning performance more effectively. Traditional advising systems rely heavily on the advisor's analysis of tabular data, which can be time-consuming and inefficient when dealing with a large number of students. In contrast, MyOsmas uses visualization representations to help both advisors and students identify strengths, weaknesses, risks, and opportunities to improve performance achievement. MyOsmas relies on a student ontology as a knowledge base to ensure the process of development runs smoothly. All functions of the system were developed in small batches using three increments, which allowed the development team to address potential issues early on and ensure a high-quality end product. Finally, based on the result of system functionality validation using use case testing techniques, MyOsmas has the potential to be effective in helping both advisors and students identify risks to mitigate and opportunities to increase performance achievement. By providing a more efficient and effective advising system, MyOsmas has the potential to improve the academic performance of students and reduce the workload of academic advisors.

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ACRONYMS

AC10	Software Engineering
SRS	Software Requirement Specification
PdP	Teaching And Learning
LMS	Learning Management System
SDD	Software Design Document
STD	Software Test Document
UPSI	Universiti Pendidikan Sultan Idris
SUS	System Usability Scale

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ATTACHMENT LIST

Ref	Reference
A	SRS
B	SDD
C	STD

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter discusses an objective that need to achieve background and its significance to the user that uses the system. There are also has found a problem that happens to the advisor in managing the performance of a student. The learner profile is the most important component of personalized learning, due to its ability to represent the characteristics of each learner such as personal information, level of knowledge, preferences, and learning styles **(C. Ikram, 2021).** Identifying the student profile can help the advisor to analyze their characteristics and what is the method of advising for implement in the student's career path.

Learner profiles also can help to visualize how the different of each individual in perceive learning and their knowledge when they follow the classroom session. Thus, academic advising is a crucial component of any educational institution as it helps students navigate their academic path, explore potential career options and academic disciplines, and identify opportunities available in the college environment. A comprehensive and precise advising system can be a valuable tool for advisors, providing them with accurate and useful information. Based on this scenario, MyOSmas System which focuses on AC10 students in UPSI will be developed.

1.2 Research Background

The current learning in universities is more advanced and many technologies have been implemented to make the learning process smooth and modern. However, in the advising process, the advisor doesn˘t have any tools identify the system that student's profile before advice to know their characteristic, ability, performance, and skill that the student does not show it. When the student profile can be identified so it is easy for the advisor to help student improved their ability in learning. Other than that, the learning method is not personalized for students and it `one fit all to concept follow what the course has been chosen by the advisor to give to them. The focus of this thesis is to ensure the advisor can know the ability of their student that integrated with a profile for personalized learning in the classroom.

In this study, the MyOsmas system is developed to enhance the student profile identified by an advisor and can know the ability, performance, and skill required by their student in learning. It also can help in personalized learning which is advisor knows how to choose the subject with match the stud learning˘style that required. The observation has been carried out on selected universities to see how the MyOsmas system can be implemented for the advisor and student while the advising and learning process begins. The research for similar systems has been done by analyze their characteristics and match with the MyOsmas system whether it can be used as a main system in learning methods for universities.

1.3 Problem Statement

The case study investigates that traditional advising systems depend greatly on the effort of the advisor to analyze the strength and *(A System Framework for E Academic Advising*, 2015). This occurred because the adviser had to manually assess a student's performance information, such as grades or test results, to identify the student's strengths and weaknesses. To find patterns and trends, the adviser must manually sift through a lot of data, which may be a time-consuming and error-prone procedure. This method will make it a problem for an advisor to generate all the performances of their students accurately.

The other problem happened is advisers tend to recommend courses based on their interests or preferences rather than trying to understand the perspective of the student. This will make the student become confused to choose their favorite subject and has to follow their advisor's choice and this also can make they cannot gain the skill and fulfill the requirement for the subject taken. Then, students also may feel as though they are being led in a direction that is at odds with their interests and objectives, which can be problematic. They can find up enrolling in classes that they don't like or that don't assist them to advance along their desired professional path. This can sometimes even lead to students quitting school or changing their majors, which can be expensive and time-consuming. Hence, developing this system can ensure the student and advisor can manage the teaching and learning process in the modern environment and can be implemented for future use. (*A New Framework for E Academic Advising*, 2015)

1.4 Research Objective

This research's goals are very important for setting the target and goal for making this MyOsmas System. Several goals have been set up for putting this system into place. The Objective of the system is:

¿ To identify student profile ontology in the development of the system

¿ To test the functionality of student profile management using a tabular style

¿ To test the functionality of student's skill using visualization and style

1.5 Scope

The main focus of this project is to identify the student profile criteria related to classroom assessment, performance, and personalized skill learning. This content will be the main function in the system that can help the advisor to assign the suitable course to the student in course selection with follow their skill and learning style so the student also can know their learning style and it will personalize their learning in the classroom. The system also can help to generate the student profile based on the result that the advisor has inserted.

This system also will be focusing on the advisor who can insert the result, and the system will generate and display in the graph their performance, and skill with the subject they have taken and the advisor can identify which students have fulfilled the requirement of the course and met with the PLO of course or objective target. Students that not met the goals can be monitored by an advisor who guides them to be more efficient and smart when doing the course selection because it will affect their performance later. The data taken is performance details of the student in AC10 at UPSI that be used in a system. The platform used to develop this system is web-based with the framework Laravel and PHP language for coding it.

1.6 Research Significance

This study outline user requirement from both advisor and student for advising and learning method in using the MyOsmas system. Applying this system will help the advisor easy to identify the characteristic and profile of the student in learning because the ontology development applied in the system will help the advisor to generate the required skill based on a result by a student to identify the student profile for advisor easy to know the required level of ability student when they learning in the classroom. Then, after the student profile has been created the advisor can identify the student and separate them based on the performance that has been displayed in a graph by each student and this will be easy for the advisor to be more focused on the required student that has low performance in learning. Furthermore, applying this system in the universities can help advisors easily to know their skills and ability in the subject that is taken for personalized learning. With this benefit will

make the system will be main character that help the advising and learning process become smooth and also can help to improve the personalize learning of student in universities.

1.7 Operational Definition

Term	Definition
Advising System	An educational advising system is a tool or platform that aids students and/or advisors in the planning, goal-setting, and decision-making phases of their academic careers. These technologies can support educators in giving effective guidance and assistance, assist students in making knowledgeable decisions about their educational and professional routes, and. **(Hsieh, P., & Wu, J. 2017)**
Leaner Profile	Learner profiles are important sources of information because they show not only the learners' names, ages, and genders, but also their learning abilities, personalities, and conditions. Research on learner profiles isn't just limited to studies that try to keep track of learners' information. Instead, it's growing to include studies that offer personalised learning that takes learners' traits into account. **(S. Lee,2015)**
Personalize Learning	Personalized learning is a way of teaching that makes learning fit the needs, interests, and skills of each student. Each student is given differentiated instruction based on their personal learning characteristics. **(Bernacki, 2021)**
Student Ontology	An ontology is a formal specification of a conceptualization, or a description of the ideas and connections that exist within a certain field. A set of concepts and their relationships are defined by an ontology, which can be used to represent and explain

	the things and connections in a certain field of study or application. **(Edward N. Zalta, 2019)**
Web Based	Software or applications that operate on the internet and are accessible through a web browser. Web-based applications do not need to be downloaded and installed on a device as they are hosted on servers and accessed through the internet.

Table 1.7: Operational Definition table

1.8 Conclusion

The MyOsmas system is impressive system. This technology is a game-changer for education, providing students with personalized counseling and learning strategies that can help them reach their academic goals. And it's not just students who benefit - advisors can use the system to adjust their advising style to meet the unique needs of each individual. The MyOsmas system's flexibility and adaptability to different learning styles and preferences make it an attractive option for advisors looking to improve their approach.

One of the most exciting features of MyOsmas is its ability to track a student's progress over time. Advisors can use the system to monitor a student's development and identify areas where they might need additional support or guidance. This is a significant advantage for students who are struggling academically or have specific learning requirements. The potential for MyOsmas to revolutionize how advising and learning are conducted in higher education is truly awe-inspiring, and it's clear that technology has the power to enhance the student experience like never before.